Multi-Channel H.264 HD Encoder

HVE-2X00

User Manual

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1 Introduction

1.1 Abstract

With a global deployment of digital headend equipment, Caton is proud to present a reliable, low cost and high performance multiple channel encoders. This product line includes six, eight and ten channels of H.264 HD encoders to be multiplexed to an MPTS ASI output or IP output.

The HVE-2X00 is a real time distribution encoder designed specifically for Digital Television systems, featuring advanced video filtering, compressed audio and a jitter-free, accurate and standard compliant H.264 transport stream.

Regardless of your distribution system, cable, satellite, terrestrial, or MMDS, the HVE-2X00 represents the state of the art in H.264 local encoding.

1.2 Main Features

- 1U with Modular Design, it could be configured with different module based on needs
- Up to 10 channel HD H.264 encoding
- Support 1080P60 FULL-HD encoding
- Up to 10 channel SDI/HDMI input
- Re-Multiplexing, up to 10 internal encoded SPTS inputs
- Support 2 ASI redundant output
- Dual redundant power supply
- Support front panel control and web UI management

1.3 Panel Design

1.3.1 Front Panel

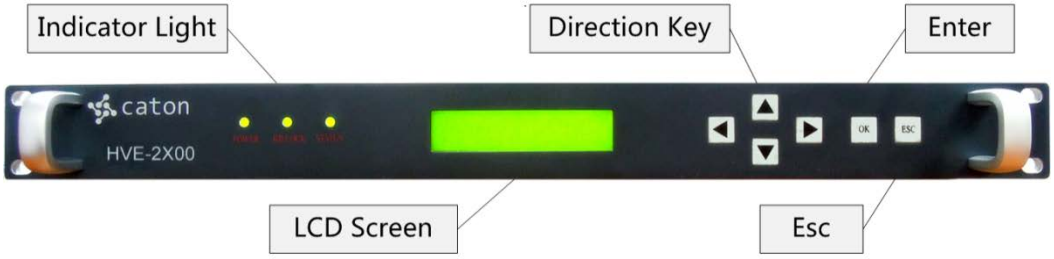


Figure1.1 Front Panel

1) Indicator Light：Indicate the current device status. From left to right：
   - i Power Light：Green indicates right power status, Red indicates abnormal power status.
   - ii Kblock Light：Green indicates front panel is unlocked, Red indicates front panel is locked.
   - iii Encoding Light：Green indicates right encoding status, Red indicates abnormal encoding status.
2) LCD Screen：Display the basic configuration & parameters of the device.
3) Control Buttons：Including Direction Key, Enter Button and Esc Button.

1.3.2 Rear Panel

HVE-2X00 applies modular design, it could be plugged in custom amount of encoding module and output module based on needs (Up to 5 encoding module in 1 chassis). Each encoding module can achieve 2 channel encoding.

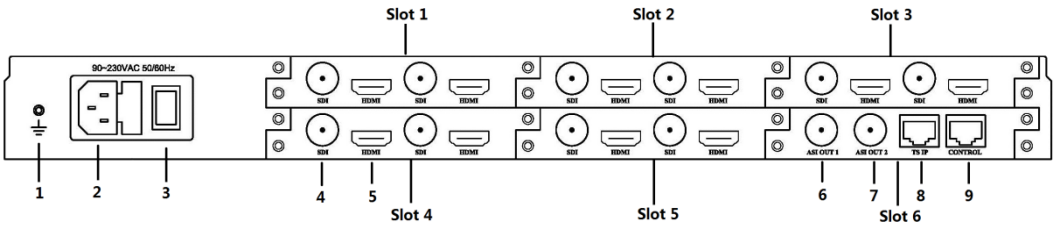


Figure1.2 Rear Panel

1. Grounding point
2. Power Interface
3. Power switch
4. SD/HD-SDI input port

5. HDMI input port.
6. ASI OUT 1
7. ASI OUT 2
8. RJ45, 100 Base-T, TS output port
9. RJ45, 100 Base-T, Ethernet control port

Tips：Slot1~Slot6 can be plugged in custom amount of encoding module and output module based on needs. “X” can be valued as “2”,”4”,”6”,”8” and ”X”, which represents 1/2/3/4/5 encoding modules.

2 Power up

Connect video input source, then connect the power and press the switch in the rear panel to power up the device.

Note：1. The device may not able to recognize input signal if connecting video input source after power up.

2. Please confirm that the power is standard and suitable to the device before power up.

3 Front Panel Control

3.1 Control Method

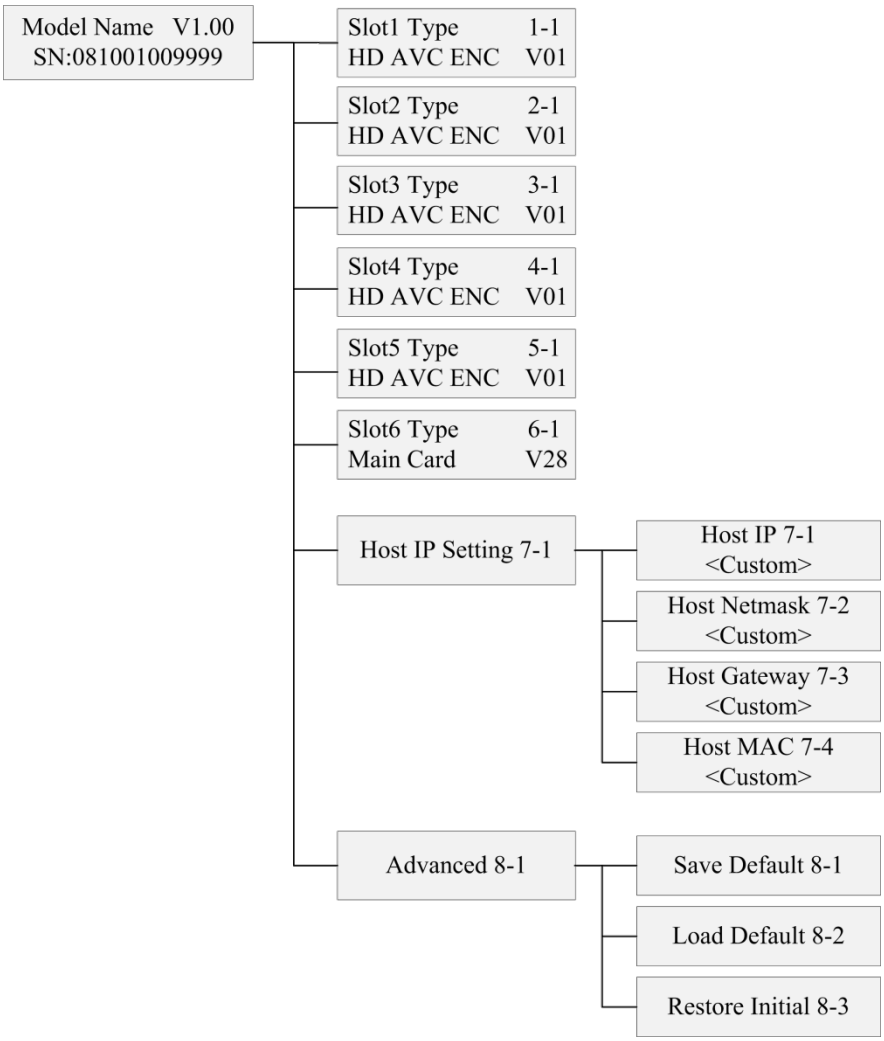
Through the HVE-2X00 front panel, you can do the following operations:

- Unlock：Continuously press “OK” button twice and “Esc” button twice to unlock the front panel；
- “▲” “▼”: Select parameters to view or configure. Adjust configurable values in editable mode；
- “◄” “►”： Move the cursor in editable mode；
- OK：Enter editable mode or navigate to a sub menu.
- ESC：Exit editable mode or go back to a parent menu.

After the device is unlocked, press "▲", "▼" keys to browse the main menu. Press "OK" key to enter the selected sub-menu. Press "OK" key to modify parameters of the selected item.

To choose an option, press "◄", "►" keys to choose the option. Press "OK" key to confirm the modification. Press "ESC" key to cancel the modification. To change the parameter, use "◄", "►" keys to move the cursor and press "▲", "▼" keys to adjust the value. Press "OK" key to confirm the modification. Press "ESC" key to give up the modification.

3.2 Menu Overview



- **Slot Type**：View the card information in the six slots.
- **Host IP**：View or set the host IP address.

  You can customize the host IP.
- **Host Netmask**：View or set the host netmask.

  You can customize the host netmask.
- **Host Gateway**：View or set the host gateway.

  You can customize the host gateway.
- **Host MAC**：View or set the host physical address.

  It is a unique value in any network.

  Note: To avoid network conflicts, you are not allowed to modify the Host MAC normally.

If you do need to modify the device's physical address, please consult the relevant network personnel, and modify under the guidance of them.

- **Save Default**：Save the current configuration as default configuration.
- **Load Default**：Reload the default configuration which has been saved.
- **Restore Default**：Recover to the original configuration which was configured by the manufactory.

4 Web Control

4.1 Web browser configuration and log in

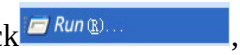
4.1.1 Web browser configuration

You can configure the device via Internet.

☞ Prepare a PC with web browser. IE 8.0 or Firefox6.0 or higher version is recommended.

☞ Connect PC and the device through network interface.

☞ Make sure that the IP address of the device and PC are in the same network segment: Click

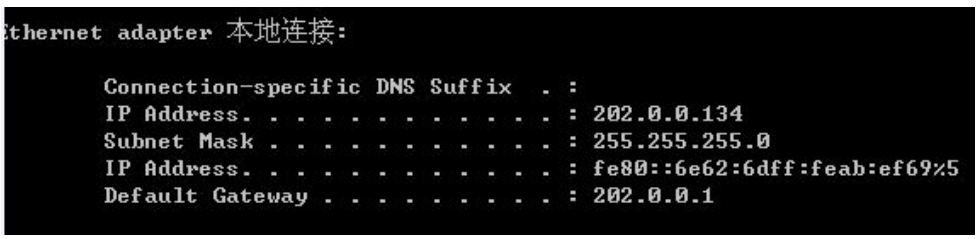
, then click 

, and input “CMD” in the textbox.

☞ Click

, you will see:

☞ Input **ipconfig**, and press the “Enter” key, you will see:


thernet adapter 本地连接:
Connection-specific DNS Suffix . :
IP Address. . . . . : 202.0.0.134
Subnet Mask . . . . . : 255.255.255.0
IP Address. . . . . : fe80::6e62:6dff:feab:ef69%5
Default Gateway . . . . . : 202.0.0.1

Tips：202.0.0.134 is the local IP address of the PC.

☞ Confirm the IP address of the device through the front panel.

Host IP 7-1 192.168.001.070

Tips: 192.168.001.070 is the local IP address of the device.

☞ As the IP address of the device and PC are not in the same network segment, user needs to modify the device local IP address to make sure that the IP address of the device and PC are in the same network segment (eg. Set the device IP address to be 202.0.0.70). And make sure the IP address is not occupied by other devices, which might cause IP address conflict.

4.1.2 Log In

Open the web browser of PC and input the IP address of the device. Click “Enter” then it will display as the figure 4.1:

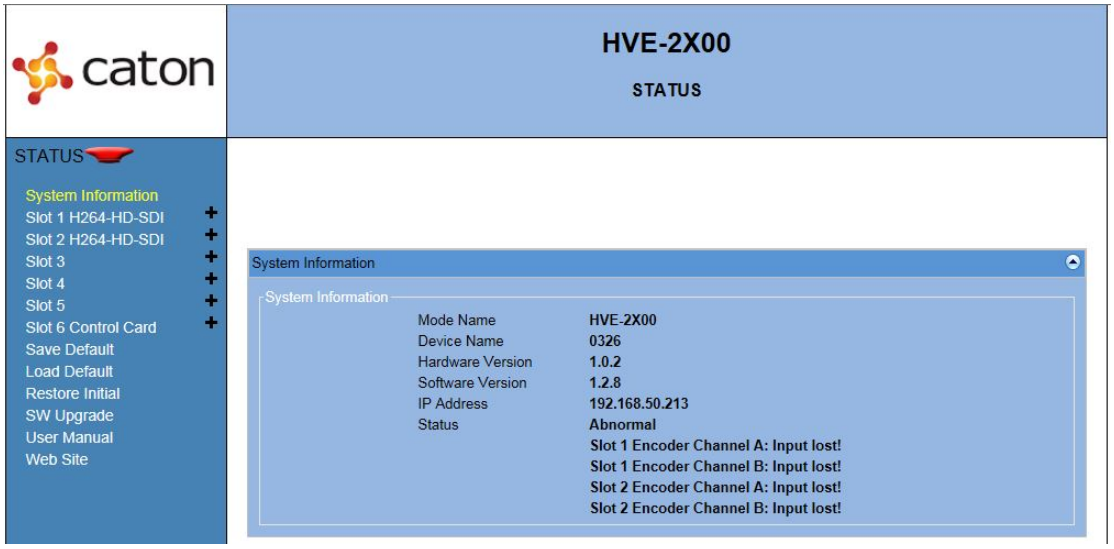


Figure4.1 System Information

You can select a menu item from the main menu on the left to view or set the parameters of the device.

4.2 Encoding Module Setting

Slot1~Slot5 are Encoding Modules, each slot support 2 channel HD/SD-SDI or

HDMI encoding. Take Slot1 for example, as the control method of Slot1~Slot5 are the same.

Click **Slot 1 H264-HD-SDI** in the main menu，then click **Channel A**. You can view or configure the parameter of channel A.

4.2.1 System Parameters Setting

The System Parameters page is as shown in figure4.2.

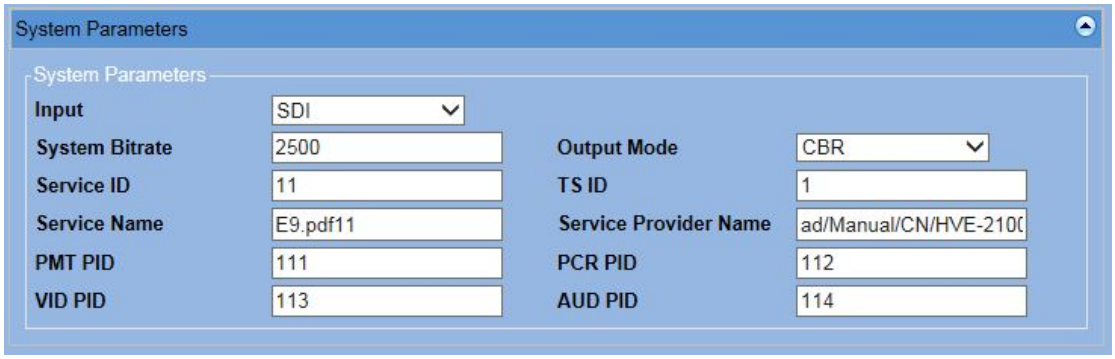


Figure4.2 System Parameters Page

You can configure the system parameters referring to table 4-1. Click Apply to save the modifications.

Table4-1 System Parameters

Menu	**Range**
Input	HDMI
	SDI
System Bitrate	800~22000
Output Mode	CBR
	VBR
Service ID	1~65534
TS ID	1~65534
Service Name	<custom>
Service Provider Name	<custom>
PMT PID	32~8190
PCR PID	32~8190
VID PID	32~8190
AUD PID	32~8190

4.2.2 Video Parameters Setting

The Video Parameters page is as shown in figure4.3:

Figure4.3 Video Parameters Page

You can configure the video parameters referring to table 4-2. Click Apply to save the modifications.

Table4-2 Video parameters

Menu	**Range**
Video Resolution	Recognize automatically
AVG Bitrate	800~20000
Video GOP	IBBP
	IPPP
	IBP
Max Bitrate	1500~22000
Min Bitrate	600~18000

4.2.3 Audio Parameters Setting

The Audio Parameters page is as shown in figure4.4:

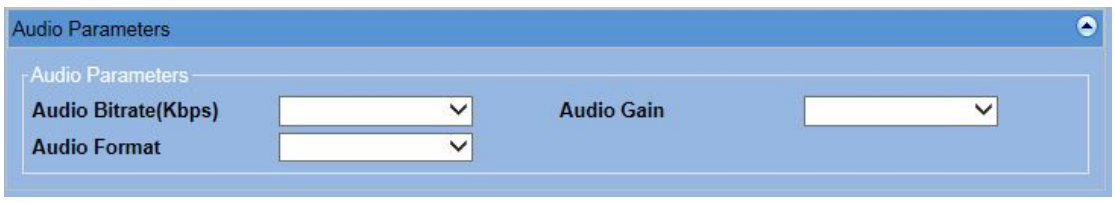


Figure4.4 Audio Parameters Page

You can configure the audio parameters referring to table 4-3. Click Apply to save the modifications.

Table4-3 Audio Parameters

Menu	**Range**
Audio Bitrate(Kbps)	64
	128
	192
	256
	320
	384
Audio Gain	-12
	-6
	0
	6
	12
Audio Format	MPEG-1 Layer II
	AC3 Pass Through

4.3 Output Module Setting

4.3.1 ASI Out Setting

Click **Slot 6 Control Card** in the main menu, then click **Main Basic**. The ASI out setting page is as shown in figure 4.5:

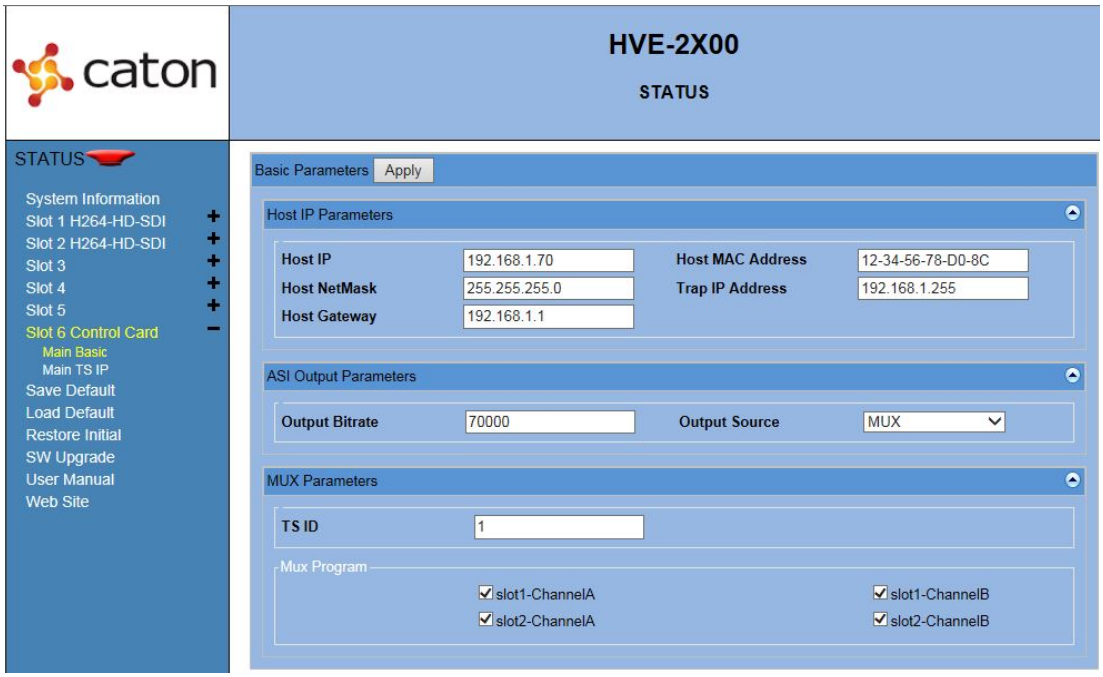


Figure4.5 ASI Out Setting Page

You can configure the ASI out parameters referring to table 4-4. Click Apply to save the modifications.

Table4-4 ASI Out Parameters

Menu		**Range**
Host IP Parameters	Host IP	<Custom>
	Host NetMask	<Custom>
	Host Gateway	<Custom>
	Host MAC Address	<Custom>
	Trap IP Address	<Custom>
ASI Output Parameters	Output Bitrate	<Custom>
	Output Source	MUX
MUX Parameters	TS ID	<Custom>
	Mux Program	slot1-ChannelA
		slot1-ChannelB
		Slot2-ChannelA
		Slot2-ChannelB
		Slot3-ChannelA

		Slot3-ChannelB
		Slot4-ChannelA
		Slot4-ChannelB
		Slot5-ChannelA
		Slot5-ChannelB

Note: To avoid network conflicts, you are not allowed to modify the Host MAC normally. If you do need to modify the device's physical address, please consult the relevant network personnel, and modify under the guidance of them.

4.3.2 TS IP Out Setting

Take Channel A of Slot 1 for example, As the control method of each channel is the same.

Click **Slot 6 Control Card** in the main menu, then click **Main TS IP.** The TS IP out page is as shown in figure 4.6:

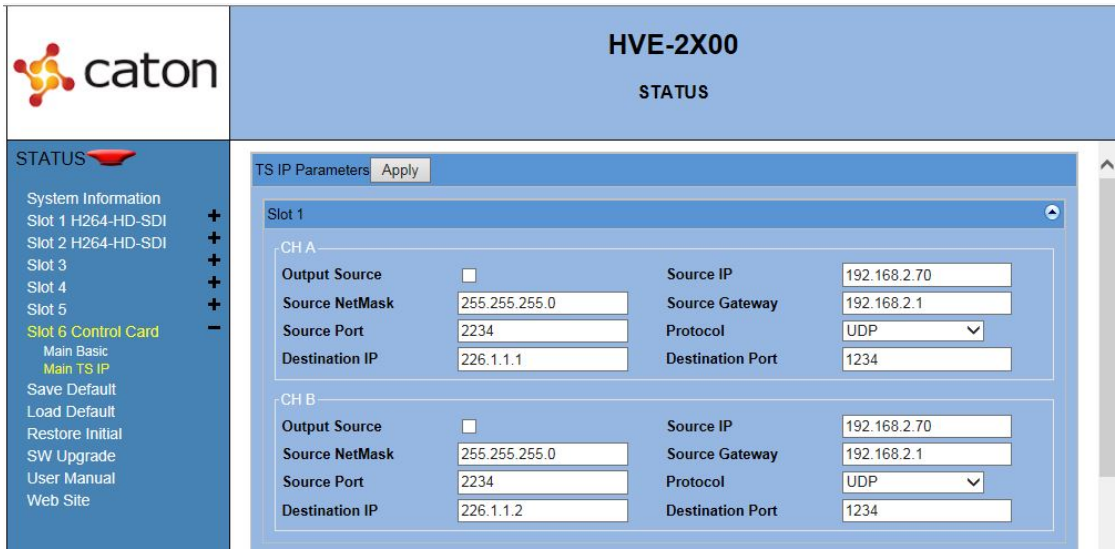


Figure4.6 TS IP Out Page

Table4-5 TS IP Out Parameters

Menu	**Range**
Output Source	☐ or ☑
Source IP	<Custom>

Source NetMask	<Custom>
Source Gateway	<Custom>
Source Port	<Custom>
Protocol	UDP
	RTP
Destination IP	<Custom>
Destination Port	<Custom>

Tips：Destination IP address can be not only a unicast address but also a multicast address. When it is a unicast address, the IP address of the device and the destination IP address should be in the same IP network segment.

4.4 Others

4.4.1 Save Default

Click **Save Default** in the main menu. You will see the following page:

Figure4.7 Save Default Page

You can Save the current configuration as default configuration by clicking Save.

4.4.2 Load Default

Click **Load Default** in the main menu. You will see the following page:

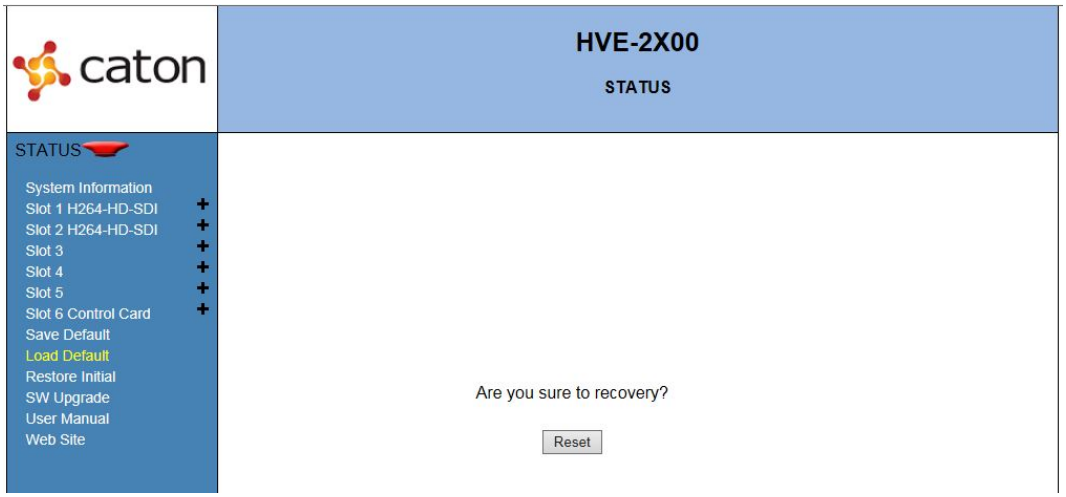


Figure4.8 Load Default Page

You can load the default configuration which has been saved by clicking Reset.

4.4.3 Restore Initial

Click **Restore Initial** in the main menu. You will see the following page:

Figure4.9 Restore Initial Page

You can restore the initial configuration which was configured by manufactory by clicking Restore.

4.4.4 SW Upgrade

Click **SW Upgrade** in the main menu. You will see the following page:

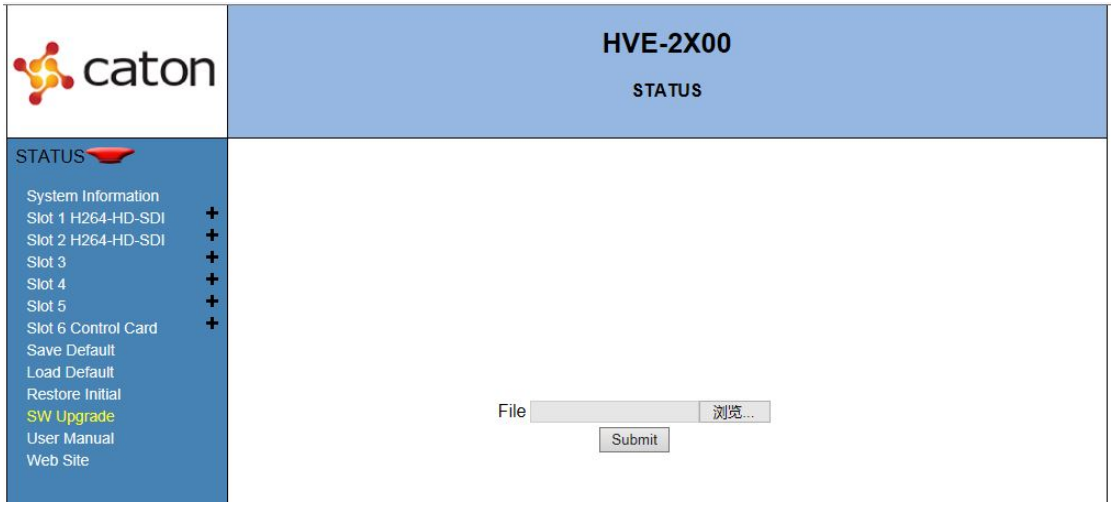


Figure4.10 SW Upgrade Page

You can select the upgrade file by clicking 浏览... . Then click Submit to upgrade the device.

4.4.5 User Manual

Click **User Manual** in the main menu. You can refer to the user manual.

4.4.6 Web Site

Click **Web Site** in the main menu. You can check the webpage of Caton Technology for more information (www.catontechnology.com).

5 Technical Specifications

5.1 Encoding Module

Max Module Number	5	
Video Encoding	Encoding	H.264 High profile @ Level 4.2
	Video Input	2×3G-SDI/HDMI
	Resolution	1920×1080×60p/50p， 1920×1080×60i/50i， 1440×1080×60i/50i， 1280×720×60p/50p， 720×480×60i， 720×576×50i；
	Bit rate Control	CBR，VBR
	GOP Length	GOP Available
Audio Encoding	Encoding	MPEG-1 Layer Ⅰ/Ⅱ
	Audio Input	Embedded SDI or HDMI
	Sampling Rate	48KHZ
	Audio Bit Rate	32/64/128/192/256/320/384Kbps
	Audio Gain	Available
Re-Multiplex	Up to 10 internal encoded SPTS inputs	

5.2 Output Module

ASI Output	Output	2 channel ASI mirroring output
	Bit rate	Up to 160Mbps
IP Output	Format	TS Over IP
	Protocol	UDP/RTP，Support Unicast/Multicast/Broadcast
	Output (1 choice）	Support up to 10 IP output port Support multiplexer output
	Interface	2×100Base-T RJ45 (TS IP & Control)

5.3 Physical Parameters

Size	433×338×43.7mm (1RU)
Weight	4kg
Voltage	AC 100～240V，50/60Hz
Power	40W
Temperature	0~55℃
Operating Humidity	10%~90%